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### Authors

Chan-Golston, Alec M

Friedlander, Scott

Glik, Deborah C

et al.

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## Comparing Lay Community and Academic Survey Center Interviewers in Conducting Household Interviews in Latino Communities

Alec M. Chan-Golston, MS<sup>1</sup>, Scott Friedlander, MPH<sup>1</sup>, Deborah C. Glik, ScD<sup>1</sup>, Michael L. Prelip, DPA<sup>1</sup>, Thomas R. Belin, PhD<sup>1</sup>, Ron Brookmeyer, PhD<sup>1</sup>, Robert Santos, MS<sup>2</sup>, Jie Chen, PhD<sup>3</sup>, and Alexander N. Ortega, PhD<sup>1,4</sup>

<sup>1</sup>Center for Population Health and Health Disparities, Fielding School of Public Health, University of California, Los Angeles

<sup>2</sup>Urban Institute

<sup>3</sup>School of Public Health, University of Maryland, Department of Health Services Administration

<sup>4</sup>Dornsife School of Public Health, Department of Health Management and Policy, Drexel University

### Abstract

**Background**—The employment of professional interviewers from academic survey centers to conduct surveys has been standard practice. Because one goal of community-engaged research is to provide professional skills to community residents, this paper considers whether employing locally trained lay interviewers from within the community may be as effective as employing interviewers from an academic survey center with regard to unit and item nonresponse rates and cost.

**Methods**—To study a nutrition-focused intervention, 1035 in-person household interviews were conducted in East Los Angeles and Boyle Heights, 503 of which were completed by lay community interviewers. A chi-square test was used to assess differences in unit nonresponse rates between professional and community interviewers and Welch's *t* tests were used to assess differences in item nonresponse rates. A cost comparison analysis between the two interviewer groups was also conducted.

**Results**—Interviewers from the academic survey center had lower unit nonresponse rates than the lay community interviewers (16.2% vs. 23.3%;  $p < 0.01$ ). However, the item nonresponse rates were lower for the community interviewers than the professional interviewers (1.4% vs. 3.3%;  $p < 0.01$ ). Community interviewers cost approximately \$415.38 per survey whereas professional interviewers cost approximately \$537.29 per survey.

**Conclusions**—With a lower cost per completed survey and lower item nonresponse rates, lay community interviewers are a viable alternative to professional interviewers for fieldwork in community-based research. Additional research is needed to assess other important aspects of data quality interviewer such as interviewer effects and response error.

## Keywords

Data collection; community survey; health surveys; Hispanic Americans; survey methodology

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An important goal of survey research is to collect data efficiently and with the greatest levels of validity and reliability. Given the expertise needed to run a successful survey, the field of survey research has often involved large private firms that perform surveys on a contractual basis. Academic survey research centers, typically housed in research-intensive universities, have also conducted surveys on a contractual basis across a variety of modes of data collection, including mail, telephone, web-based, and face-to-face interviewing, while drawing on the skills of experienced academic researchers to incorporate scientifically rigorous designs and methodologies. Consequently, academic researchers, as well as businesses and other organizations, often use survey research groups to collect survey data for a variety of community-based studies.

The use of these services often draws a substantial portion of research budgets<sup>1</sup> and may limit opportunities for community members to participate in the research process. Furthermore, academic survey centers can face administrative challenges, which may compromise the quality of the work.<sup>2</sup> For some types of surveys, employing and providing sufficient training and support to local lay interviewers based in a community-based organization (CBO) could be viewed as an alternative. This approach might be especially appealing for community-engaged studies, because a typical goal of this type of research is to give back to the community from which research is derived,<sup>3</sup> and this is one way to build local community capacity and professional opportunities.

Studies on or of the effectiveness of community lay interviewers compared with professional interviewers in community-based research have yielded diverse findings. One study concluded that community interviewers were not able to obtain accurate answers more frequently than their professional counterparts and that professional interviewers were more likely to elicit honest responses to sensitive questions.<sup>4</sup> Possible explanations are that professional interviewers had more training or that respondents felt more comfortable disclosing personal information to someone socially distant. Other studies, however, are more favorable to community interviewers owing to their familiarity with the local community and ability to encourage greater survey participation.<sup>5</sup>

Sana et al.<sup>6</sup> found that unit response rates were similar between interviewer types, but respondents were more likely to give honest answers concerning income and contraceptive use when speaking with what the investigators labeled an “outside interviewer.” However, the investigators noted that respondents appeared to adjust their answers when they perceived that the social expectations of “outside” interviewers contradicted the social beliefs of the local community.

The degree to which lay community interviewer performance is comparable to that of professional interviewers from academic survey centers is thus not a settled question in the literature. In part, this is because few studies have made use of both types of interviewers in the same study, with the notable exception of Holbrook et al.<sup>4</sup> and Sana et al.<sup>6</sup>

The central goal of this paper was to compare the effectiveness of community lay interviewers and professional interviewers from an academic survey center with respect to nonresponse rates and cost. Results are from a household survey in a neighborhood corner store conversion project in East Los Angeles and Boyle Heights, two neighboring predominantly Mexican-American, low-income communities in Los Angeles, California. With 97.1% of the 2010 Census population in East Los Angeles being Latino, this community is the proportionally largest Latino population in the United States.<sup>7</sup> Both these communities are classified as food swamps owing an over-abundance of cheap fast food restaurants and poor access to fresh produce. An unplanned change in the administration of surveys during the study provides a unique opportunity to compare the quality of baseline survey responses from interviewers from an academic survey center to those from a CBO. Furthermore, we hypothesized that lay interviewers recruited from the study catchment area would have fewer item nonresponses for sensitive questions such as income and immigration status. We also examined the cost effectiveness per survey of using interviewers from a CBO versus an academic survey center.

## METHODS

### Data Collection

This research focuses on field surveys completed in the context of Proyecto MercadoFRESCO (Fresh Market Project), a study to evaluate the impact of a multilevel, community-engaged corner store conversion intervention study aimed to improve access to healthy food in two Latino food swamps. The methodology of the study has been described in detail elsewhere.<sup>8</sup> In brief, to evaluate the intervention we conducted a community household survey in neighborhoods surrounding corner stores in East Los Angeles and Boyle Heights. There were a total of eight sample sites situated around these corner stores, grouped into four dyads, each with a treatment and control arm. The University of California, Los Angeles (UCLA), Institutional Review Board approved all study protocols.

At the beginning of the study, we approached and established a collaborative relationship with a CBO, Volunteers of East Los Angeles (VELA), which was part of our existing network of community partners in East Los Angeles. VELA is a local nonprofit group that works to foster growth and stability in East Los Angeles by partnering with members of the community. The organization has a particular interest in improving healthy food access, and they have implemented a farmer's market, cooking classes in the community that emphasize healthy eating, a health and wellness program, and a community garden program. VELA helped to create our community advisory board (CAB), consisting of local business owners, health practitioners, law enforcement, community leaders, and residents, which advised on the design and implementation of the study. Formal CAB meetings were initially held quarterly and during the later years of the study were held on an as-needed basis. Meetings with individual CAB members also occurred on an ad hoc basis based on project demands. VELA, the CAB, and local youth also planned outreach and dissemination activities, including a social marketing campaign aimed at healthy eating and the implementation of local cooking demonstrations at the converted corner stores. More information on these activities is described in Ortega and colleagues.<sup>8</sup> Although VELA was a valuable partner, the

study was conceived of and designed by academic researchers, and thus our approach was a community-engaged one rather than a community-based participatory research one.

The academic survey center initially hired for data collection has existed for 40 years and has been involved in conducting national and local surveys for both government and private organizations using a variety of modes of data collection including mail, telephone, web-based, and in-person interviewing. After the academic survey center had sampled two dyads, leadership changes and budget concerns led to a discontinuation of the survey center's services. After this, VELA was contracted to identify and train local lay interviewers to conduct interviews for the two remaining dyads. These lay interviewers were trained by UCLA public health research staff in collaboration with VELA. VELA was also responsible for the management of interviewers, as well as the oversight and maintenance of data collection and administration.

Interviewers from both the academic survey center and VELA were bilingual in Spanish and English, predominantly Latino/a, female, between the ages of 18 and 46, and all had at least a high school education. Of the 16 interviewers employed by the academic survey center, 3 had at least 6 years prior experience. Three of the eight local interviewers employed by VELA had prior experience in surveys (with an average of 2.8 years of experience). Although nonresponse can vary with sex,<sup>9</sup> age,<sup>10,11</sup> and ethnicity of the interviewer,<sup>11</sup> the demographic similarity of the interviewers can be expected to mitigate such sources of bias. Interviewers were paid for their services and given similar training regimes to conduct household face-to-face interviews. Interviewers at the academic survey center were given 3 days of project-specific training, and VELA interviewers were given 7 days of training that, in addition to the project-specific training, included general training in interviewing techniques, computer-assisted telephone interviewing, computer-assisted personal interviewing, refusal aversion, working in community settings, and adverse event protocol. All VELA staff and interviewers were required to take the Collaborative Institutional Training Initiative training as well as the behavioral sciences, social sciences, and HIPAA modules of the National Institutes of Health Human subjects research training.

Community surveys were conducted using computer-assisted personal interviewing for both the academic survey center and VELA. In-person interviewers were used in this study owing to the length of the survey, the complexity of the questions asked, and the expectation that in-person interviews would be the best way to achieve representativeness and high response rates.

The questionnaire consisted of more than 600 questions pertaining to demographic characteristics, food purchasing history, food preferences, nutrition knowledge, health care access, and health behavior. Of 1035 interviews completed, 532 were completed by the academic survey center and 503 were completed by VELA. The demographic profiles of the respondents were very similar across interviewer type. Of those interviewed by the academic survey center, 77% (411) were women, 62% (329) of the interviews were conducted in Spanish, and the mean age was 45.7 years with a standard deviation of 18.1. Similarly, of those interviewed by VELA, 79% (397) were women, 59% (297) of the interviews were conducted in Spanish, and the mean age was 47.9 years with a standard deviation of 18.0.

Because the aims of this paper were conceived after study completion, neither group of interviewers was aware that their work was being studied and thus Hawthorne effects are not a concern.

### Variables of Interest

**Unit Nonresponse Rate**—The unit nonresponse rate was calculated based on the proportion of those who were interviewed and those who were eligible to complete the questionnaire. The records for both the academic survey center and VELA indicate the number of respondents approached and the number of refusals that were encountered. Using these data, we determined the proportion of refusals in the pool of respondents for each respective organization. A chi-square test was used to determine whether the academic survey center or VELA had a differing proportion of unit response rates.

**Item Nonresponse Rate**—The item nonresponse rate was calculated based on a proportion of nonresponse to questions in the community survey. Nearly every question is composed of at least four potential responses, including “don’t know” and “refused” as response options. Here, we treated “don’t know” and “refused” as item nonresponses, because these responses typically did not contribute to data summaries of interest. The number of nonresponses were summed for each respondent and then divided by the total number of questions each respondent answered (including those they may have answered as don’t know or refused), resulting in the item nonresponse rate for each individual interviewed. This approach was motivated by the fact that certain questions were contingent upon earlier responses (e.g., gender-specific questions), meaning that not all respondents were asked the same number of questions. With item nonresponse defined this way, we were able to compare the average item nonresponse rates between the academic survey center with those of VELA using Welch’s *t* test to assess statistical significance.

**Sensitive Questions**—As an extension of our interest in the item nonresponse rate, we also wanted to determine if there was a difference in nonresponse rates for sensitive questions between the academic survey center and VELA interviewers. Because surveys are increasingly collecting sensitive data,<sup>12</sup> it is becoming more important to ensure that interviewers are able to elicit meaningful responses from respondents. Studying nonresponse rates of sensitive data can help to determine the effectiveness of using interviewers from within the community for its acquisition.

Selection of sensitive questions was based on their private nature and previous use in literature. These items include income and federal assistance,<sup>13,14</sup> citizenship status, nativity, and family citizenship history,<sup>15</sup> height and weight,<sup>16</sup> and depression.<sup>17</sup> More general demographic items such as date of birth, marital status, and household composition were included owing to respondents possibly perceiving these questions as intrusive to their privacy and confidentiality.<sup>18,19</sup> Food security items, consisting of questions about the ability of individuals to support themselves with an adequate supply of food and nutrition were also treated as sensitive.

**Cost**—Records of management and crude data collection costs were used to compare the cost per completed interview between the two survey groups to assess whether the cost of using VELA was financially competitive with the cost of using an academic survey center. To determine the average cost per completed interview between groups, the total billed cost for each organization was divided by its respective number of completed interviews. This total cost was also partitioned into training, data collection, programming and development, and non-personnel costs (e.g., overhead, travel). Although both performed the same data management duties, the cost of the academic survey center also includes administrative tasks related to survey programming. A second measure, cost of training and data collection per completed survey, was calculated so that a comparison excluding fixed costs associated with the study could be made. There were no associated programming and development fees with VELA, because the survey and survey instrument had already been finalized before the VELA partnership was established. VELA was charged in full for the services received by the research team, although researchers provided data cleaning and interviewer support to VELA and this cost is not included here. VELA interviewers were paid \$10 per hour during the training period and \$13 per hour at the beginning of data collection. If quotas were met and validation scores were high, salaries were increased to \$15 per hour. The academic survey center interviewers were paid \$15 per hour, but had larger overall salaries owing to overtime pay, bonuses, and a daily per diem for travel expenses because they were not local. These additional expenses were included in the calculation of costs. All data analysis was completed using R version 3.1.1.

## RESULTS

### Unit and Item Nonresponse

Of the 635 individuals approached by academic center interviewers, 532 (83.8%) agreed to participate in the survey, compared with the 503 of 656 (76.7%) approached by VELA interviewers. As seen in Table 1, the unit nonresponse rate for the academic center was lower than for VELA, whereas the item nonresponse rate for the academic center was higher than it was for VELA. VELA's mean item nonresponse rate for "refused" was 1.75% lower than the academic center, whereas the difference in rates for "don't know" was 0.16% lower. A similar pattern was seen when comparing item nonresponse rates within each of the eight sites.

### Sensitive Questions

As seen in Table 2, examining specific sensitive questions, including those pertaining to financial matters, citizenship, general demographics, and depression, revealed no significant difference in terms of "don't know" and "refused" responses between VELA and the academic survey center. Questions pertaining to food security did reveal a significant difference in terms of "don't know" responses that was roughly 0.55% higher among VELA compared with the academic survey center. There were no "don't know" or "refused" responses for any of the household composition questions for either interviewer group.



## Cost

After compiling all crude management and data collection expenses, the total cost per survey was \$537.29 for the academic center and \$343.92 for VELA. The total cost per survey was lower by roughly 36.0% for VELA. When fixed costs were removed, the cost per survey for the academic survey center was \$296.16 and \$244.60 for VELA. Here the cost per survey was roughly 17.5% lower for VELA. Training costs were proportionally higher for VELA. These numbers and a more comprehensive breakdown of the costs are shown in Table 3.

## DISCUSSION

We presented our findings during a quarterly CAB meeting, emphasizing the contributions that local interviewers made to the study and commending VELA for its work on the project. It was found that interviewers from the academic survey center achieved lower unit nonresponse rates whereas local lay interviewers from the CBO yielded lower item nonresponse rates. This trade-off could be an important consideration in some settings. It is possible that interviewers from the academic survey center were more likely to convince individuals to participate owing to greater survey experience compared with local interviewers, despite comparable training. Such experience may allow interviewers to more accurately anticipate a respondent's reaction upon approach and alter behavior accordingly to succeed in obtaining interviews.

Although individuals were more willing to participate in the study when approached by interviewers from the academic survey center, respondents were more willing to answer items when interviewed by local lay interviewers, which resulted in a lower item nonresponse. A possible explanation for this result is that the interviewers' affiliation with an organization that is a part of the community might induce participants to be more comfortable in their conversations with the interviewers. Another possibility, which is beyond our ability to determine with the available data, is that the additional difficult-to-recruit individuals interviewed by academic survey center staff were also less inclined to answer specific questions. Carefully designed studies might be able to shed light on this as a possibility.

There was also no detectable difference seen in questions traditionally considered sensitive, such as income or citizenship status, although a significant difference was detected in questions of food security, where, in a reversal of the broader pattern for item nonresponse, interviewers from the academic survey center are able to elicit fewer "don't know" responses than VELA. A possible explanation for this finding is that participants did not wish to share with fellow community members distressing information that may be perceived as reflecting negatively on their own community.

Prior literature examining the differences in outcomes between professional and local lay interviewers is sparse and remains inconsistent, largely owing to the variation of survey modes, geographical locations, types of interviewers, and the cultures targeted in respective studies. Although previous research performed by Sana et al.<sup>6</sup> found that unit nonresponse rates were similar between professional and local lay interviewers, Schulz et al.<sup>5</sup> suggested that community lay interviewers were able to encourage greater participation in their survey.



Our findings in two neighboring Latino communities suggest that respondents were more likely to participate in the survey when performed by professional interviewers, likely owing to greater recruitment experience. Concerning individual items, Sana et al.<sup>6</sup> found that answers given to sensitive questions depended on whether the interviewer was professional or local. Holbrook et al.<sup>4</sup> suggested that the greater experience and social distance of professional interviewers resulted in more honest responses. Our findings contrast with these findings in that participants were less prone to item nonresponse to general items with community interviewers and tended not to have different item nonresponse rates for most sensitive items, with the exception of food security. However, we were unable to assess the accuracy of responses, unlike Holbrook et al.<sup>4</sup> and Sana et al.<sup>6</sup> Furthermore, unlike previous research, our sample is primarily Mexican American and Spanish speaking. This ethnic and cultural difference could have influenced our findings, because it is possible that the Mexican American community places greater value on social and ethnic connectivity, resulting in a greater tendency to provide responses to local interviewers. We believe that our results are applicable to other Latino communities.

Our findings do not uniformly favor either academic survey centers or CBOs to collect survey data. Although the academic survey center's cost per completed survey was higher using both the total cost and the cost excluding fixed prices, it was more efficient in recruiting participants for the survey. VELA had a lower rate of item nonresponse and lower average costs, but members of the community required more basic survey training that professional interviewers had already undergone. This additional training resulted in a much longer data collection period under VELA. On the other hand, training individuals from within the community not only increases their marketability for future employment in professional survey firms, but also has the potential to foster a positive dynamic between academic researchers and community members. These results suggest that using local lay community residents to conduct household in-person interviews in community-engaged research in Latino communities can be a viable alternative to using professional interviewers from academic survey centers.

There are a few limitations of this study that should be noted. Because the research questions were formulated after data collection, we are limited on the scope of measures necessary to examine fully the differences in nonresponse between the two interviewer groups. Also, owing to the post hoc nature of our study, we have no means of verifying the accuracy of answers. More carefully controlled studies could identify differences in accuracy between interviewer types.

The decision for respondents to be interviewed by the academic survey center or VELA was not randomized and was instead decided by time and location, in which each organization sampled two dyads. The time frames of the two interviewer groups did not coincide, because VELA began to survey the second group of locations only after the academic survey center interviewed the first group of locations. In addition, the training provided to the VELA interviewers was equivalent to the academic survey center and used the same protocol, but was given by investigators of the primary research project.

Furthermore, there were no statistical techniques used to account for individual interviewer effects on unit and item nonresponse. Although general characteristics were similar between groups, detailed information of the academic survey center's interviewers was unavailable for use. It is possible that response rates are dependent on these and other factors, such as the age, gender, ethnicity, and years of education of the interviewer and respondent, as well as the years of experience of the interviewer. Choosing to participate in a survey may also be influenced by external factors such as time of day and the respondent's availability. Individual questions in the survey may have also been refused owing to the pace of the interview or confusion regarding the item.

Finally, our cost data were very crude, because we did not anticipate doing a cost analysis of interviewers a priori. Payments made by the research team were not included in the cost analysis. Also, the number of labor hours spent per interview was not recorded; therefore, we cannot determine the productivity of interviewers in terms of the amount of time spent on each interview.

Although our results have shown that lay community interviewers can reduce item nonresponse rates, thus increasing the amount of usable data, more research is needed to validate the accuracy of these data with greater statistical controls and a consideration for accuracy of responses in addition to nonresponse rates.

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**Table 1**

Comparison of Unit and Item Nonresponse Rates

	Academic ( <i>n</i> = 532)	Volunteers of East Los Angeles ( <i>n</i> = 503)	Difference	95% CI	<i>p</i> Value
Unit nonresponse rate	16.22	23.32	-7.10	(-11.43, -2.78)	0.002
Item nonresponse rate					
Don't know and refused	3.33	1.42	1.91	(1.61, 2.21)	< 0.001
Don't know	0.45	0.29	0.16	(0.03, 0.29)	0.018
Refused	2.88	1.13	1.75	(1.49, 2.01)	< 0.001

**Table 2**

Comparison of Mean Nonresponse Rate for Selected Types of Questions

Type of Question (No. of Questions)	Academic (n = 532)	Volunteers of East Los Angeles (n = 503)	Difference	95% CI	p Value
Citizenship status and nativity (15)					
Don't know	0.35	0.38	-0.03	-0.28 to 0.22	0.816
Refused	1.60	0.66	0.94	-0.7 to 2.35	0.178
Depression (10)					
Don't know	0.02	0.20	-0.18	-0.61 to 0.26	0.392
Refused	0.04	0.22	-0.18	-0.70 to 0.32	0.429
Food security (7)					
Don't know	0.05	0.60	-0.55	-0.87 to -0.22	0.006
Refused	0.27	0.36	-0.09	-0.38 to 0.19	0.463
Height, weight, age, and marital status (7)					
Don't know	1.88	1.99	-0.11	-2.25 to 2.02	0.910
Refused	2.66	1.09	1.57	-1.96 to 5.09	0.352
Household composition (8)					
Don't know	0.00	0.00	0.00	—	—
Refused	0.00	0.00	0.00	—	—
Income/federal assistance (8)					
Don't know	3.93	4.99	-1.06	-8.91 to 6.80	0.776
Refused	9.65	9.23	0.42	-16.59 to 17.43	0.959

**Table 3**

## Comparison of Costs

	Academic Survey Center	Volunteers of East Los Angeles
Total cost (US\$) <sup>a</sup>	285,839.18	172,992.79
Training (%)	10.3	14.1
Data collection (%)	44.8	57.0
Programming and development (%)	37.2	0.0
Non-personnel (%)	7.7	28.9
Total cost per completed survey (US\$)	537.29	343.92
Cost of training and data collection per completed survey (US\$) <sup>b</sup>	296.16	244.60

<sup>a</sup>The costs presented only reflect the billed amount from each organization and do not include additional costs paid by the research team (i.e., data cleaning and management).

<sup>b</sup>This cost removes fixed (programming, development, and non-personnel) costs to better compare the two organizations.